Date: Wed, 22 Sep 93 04:30:22 PDT
From: Ham-Digital Mailing List and Newsgroup <ham-digital@ucsd.edu>
Errors-To: Ham-Digital-Errors@UCSD.Edu
Reply-To: Ham-Digital@UCSD.Edu
Precedence: Bulk
Subject: Ham-Digital Digest V93 #49
To: Ham-Digital

Ham-Digital Digest Wed, 22 Sep 93 Volume 93 : Issue 49

Today's Topics:
"Digital" to Europe; your thoughts on the best ways?
9600 baud signal characteristics.
Any good intro books on packet radio?
ARRL wants info on Amateur Radio activity above 900 MHz
HAPN packet, what is it? (a REAL answer)?
What is digital bandwidth?

Send Replies or notes for publication to: <Ham-Digital@UCSD.Edu>
Send subscription requests to: <Ham-Digital-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Digital Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-digital".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 21 Sep 93 16:10:08 +0200
From: agate!spool.mu.edu!nigel.msen.com!yale.edu!xlink.net!scsing.switch.ch!
kanin.arnes.si!cathy.ijs.si!lavrencic@ames.arpa
Subject: "Digital" to Europe; your thoughts on the best ways?
To: ham-digital@ucsd.edu

In article <748533198snx@llondel.demon.co.uk>, dave@llondel.demon.co.uk (David
Hough) writes:
> In article <CDMqrv.on@world.std.com> slm@world.std.com (slm) writes:
>>
>>* TCP/IP. I hear some folks are experimenting with ``encapsulating'' TCP/IP
>>ham messages in Internet to get them ``over the pond,'' which seems nice,
>>fast, and reliable (no worries about solar flares). However, my friend on the
>>other side isn't on TCP/IP (actually, neither am I yet, although I will make
>>the effort to set up and learn if it seems it will be worthwhile). Could
>>this still work? Are there gateways I could use to send messages reasonably
>>fast to Europe? Could I realistically (not awfully slow) telnet via

>>TCP/IP into a BBS in Europe to forward a message? Can I send a TCP/IP
>>message here and have it get reasonably fast to an AX.25 system in Europe?
>>
> You will probably find that even if you could get a message to Europe by
> this method, it would still be fairly slow on the VHF links into Slovenia
                                        ^^^^^^^^
> so you wouldn't necessarily gain much over the HF hop to the area. You might
> even find that your message would do a hop or two on HF across Europe anyway.
>
> I don't know of any internet gateways in the UK - licence regs are unclear
> as to whether it is allowed, and chances are someone would have to pay for
> the cost of the internet connection so that makes it even more unlikely.
>
> Dave
> --

An alternative to visit Slovenia in CyberSpace is simply to use this
medium.

--
Borut B. Lavrencic, D.Sc. | X.400   :C=si;A=mail;P=ac;O=ijs;S=lavrencic
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DOLGO SMOIS KALIS OVRAZ NIKEI NJIHK ONCNO ODKRI LIVSE BIBBL

Date: 21 Sep 93 17:06:42 CDT
From: timbuk.cray.com!hemlock.cray.com!andyw@uunet.uu.net
Subject: 9600 baud signal characteristics.
To: ham-digital@ucsd.edu

In anticipation of having to counter some (mis-)conceptions
about 9600 baud packet, I'd like to ask for authoratitive
rebuttals to statements such as:

1. 9600 baud packet will cause adjacent channel interference
   (maybe with the kicker that they were told this by ARRL HQ).

2. A data only repeater isn't legal, it has to ID in morse.

As well as any other odd-ball remarks you may have encountered
when trying to put a 9600 baud repeater on the air.

While I feel most points can be countered adequately, I'd like
to collect as much info as possible, before I need it.

Thanks,
--
andyw   N0REN/G1XRL

andyw@aspen.cray.com   Andy Warner, Cray Research, Inc. (612) 683-5835

Date: 21 Sep 1993 20:37:12 GMT
From: olivea!koriel!newscast.West.Sun.COM!seven-up.East.Sun.COM!dr-pepper.East.Sun.COM!deepspace!billp@uunet.uu.net
Subject: Any good intro books on packet radio?
To: ham-digital@ucsd.edu

After many years of neglecting my interest in radio, I've drifted back and I'm looking
for some good intro type books on the subjects of packet radio and interfacing same
with computers. If there's a FAQ for this group, could someone point me at it?

thanks

Bill Pittore - SunSelect, a Sun Microsystems Inc. Business
Chelmsford, MA 01824

bill.pittore@sun.com   (508) 442-0310

Date: 21 Sep 93 17:04:06 EDT
From: psinntp!arrl.org@uunet.uu.net
Subject: ARRL wants info on Amateur Radio activity above 900 MHz
To: ham-digital@ucsd.edu

I have been asked to document Amateur Radio activity in the upper UHF
and microwave bands. I would like to ask our newsgroup readers to
email me information about their equipment and activities on Amateur
frequencies starting with the 902 MHz band.

I would like few levels of responses:

1. A fast report on your equipment and activities. This can include
   digital modes, satellite, ATV, etc.

2. Immediate comments about your thoughts on the use of these
   frequencies, our future, the direction we are headed, the relative

importance of the different modes (no CW wars, PLEASE!). This can include summaries of the things you are planning to do (or would like to do) when you get around to it, or a soapbox of the way you think things should be.

I will forward this information to several different people here on staff, for long-term use in our work before the FCC. Out of 45K readers, I should be able to get quite a few reports. Thanks to all who respond.

73 from ARRL HQ, Ed
 N

Ed Hare, KA1CV ehare@arrl.org
American Radio Relay League
225 Main St.
Newington, CT 06111 "You will never put the puzzle together
(203) 666-1541 - voice if you keep putting all of the pieces
ARRL Laboratory Supervisor back in the box." Colleen
RFI, xmtr and rcvr testing

Date: 21 Sep 93 17:13:30 GMT
From: idacrd.ccr-p.ida.org!idacrd!n4hy@uunet.uu.net
Subject: HAPN packet, what is it? (a REAL answer)?
To: ham-digital@ucsd.edu

Many people have said words about the HAPN 4800 bps modem but have yet to answer the question. HAPN is 4800 bps duobinary encoding. Let's take zero's and one's and rather than binary digits where OR, AND is the arithmetic, let's pretend they are integers. So they are now zero's and one's as integers. Suppose the sequence of zero's and one's (integers now, not binary digits) is

a1 a2 a3 a4 a5 ...

Let's make a new sequence

b1 = 0

b2 = a2 - a1

b3 = a3 - a2

b4 = a4 - a3

and so on. Notice this is a THREE STATE SIGNAL. It can take on the
value -1, 0, and 1.

For example suppose a1 = 1, a2 = 0, a3 = 1, a4 = 1, etc.

Then b1 is 0 by definition.

b2 = a2 - a1 = -1,
b3 = a3 - a2 = 1,
b4 = a4 - a3 = 0

and so on.

You have encoded two symbol's (zero's and one's) using three symbols.
Thus you are able to transmit the same information in a more tightly
controlled spectrum. This is the controlled and planned use of intersymbol
inteference. The reason the HAPN board does not work well is that it
is a grossly suboptimal implementation of something that really needs DSP to
work well. There is a variant of this scheme where

b2 = a2 - a0,
b3 = a3 - a1,
b4 = a4 - a2,

where now the `delta encoding' is on every other symbol. This is call
modified duobinary. This even better spectral properties in that it has the
same zero in its spectrum that regular duobinary has but it also has no D.C.
component. Now this would work really well through the audio jack of an FM
radio. I think we could get 9600 through a mike jack if we use this scheme
and a Viterbi decoder. With no audio circuit filter degradation, this would
approach the performance of PSK using an approximate maximum likelihood symbol
timing algorithm and the VIterbi decoder. I was working on this before I got
the heave ho from AEA. Too bad for you and them.

Bob
--
Robert W. McGwier | n4hy@ccr-p.ida.org
Center for Communications Research | Interests: amateur radio, astronomy,golf
Princeton, N.J. 08520 | Asst Scoutmaster Troop 5700, Hightstown

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Date: 21 Sep 1993 16:22:52 -0500
From: lll-winken.llnl.gov!overload.lbl.gov!agate!howland.reston.ans.net!torn!nott!
bnrgate!corpgate!crchh327.bnr.ca!barnett@seismo.css.gov
Subject: What is digital bandwidth?
To: ham-digital@ucsd.edu

Digital bandwidth...hmmmmm.....

The theoretical maximum throughput through a given bandwidth is equal to the number of poles in the data format (2 in TTL, 4 in QPSK...) times the bandwidth in Hertz. Therefore, it would seem that for a 25Kc channel, you could send straight `on-off' data through at 50,000 bits/second. Don't forget to account for filter rolloff at the edges to lose about 10% and unless you have a really good synch algorithm running in the RX end, you will probably have to cut that rate in half.

Realistically, you could get 19.2Kbps out of a 25Kc channel with a low BER (that says little of commercially available cost though...). Digital cellular cruises along at 64Kbps on a 30Kc channel using PI/4 QPSK. Check out some of the TIA standards (IS-54, 54A, 54B, 3D...). They have alot on the data format and rates /wrt bandwidth.

Good luck.

Bobby Barnett | Any opinion stated here is certainly
Bell Northern Research | NOT BNR's...
Cellular Development Team |
barnett@bnr.ca | ...and probably not even mine.
KA4VBF |

End of Ham-Digital Digest V93 #49
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